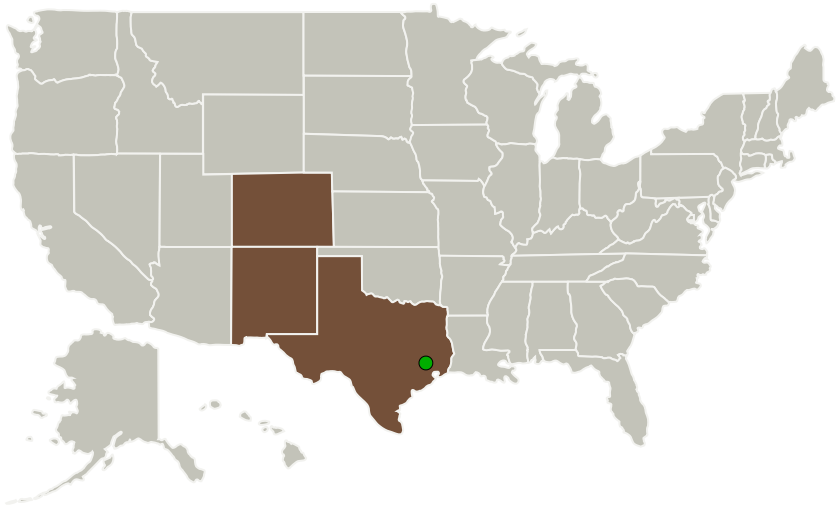
Spacesuit Multigas Monitor, Phase I

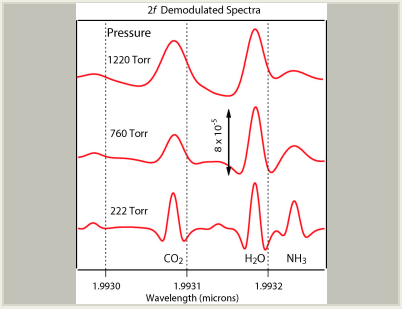
Completed Technology Project (2015 - 2016)

Project Introduction

Southwest Sciences Inc. (SWS), in collaboration with the Southwest Research Institute (SwRI), will develop a reliable, ultra compact, low power diode laser multigas sensor to measure carbon dioxide (CO2), ammonia (NH3), oxygen (O2) and water vapor (H2O) concentrations in the presence of saturated and condensable water concentrations appropriate for NASA's portable life support system (PLSS). A high sensitivity optical absorption technique known as wavelength modulation spectroscopy will be used in the sensor. The system will be light weight (<1 kg), low power (1 W), and fast (minimum 1 Hz measurement rate). The specifications of the proposed multigas sensor will provide reliable gas concentration measurements to ensure extended operation of the PLSS during extravehicular activities (EVA). The combined Phase I and Phase II project will provide NASA with a prototype sensor that will provide the same gas concentration data with equivalent or better accuracy as the current GS-300 and GS-322 sensors with the addition of an ammonia measurement not currently available in the PLSS.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Southwest Sciences, Inc.	Lead Organization	Industry	Santa Fe, New Mexico
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
Southwest Research Institute - San Antonio(SWRI)	Supporting Organization	Academia	San Antonio, Texas

Primary U.S. Work Locations	
Colorado	New Mexico
Texas	

Project Transitions

June 2015: Project Start

June 2016: Closed out

Closeout Summary: Spacesuit Multigas Monitor, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139488)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Southwest Sciences, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

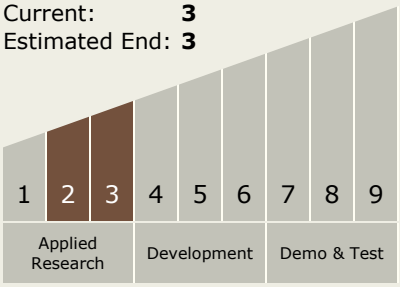
Carlos Torrez

Principal Investigator:

Anthony M Gomez

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**

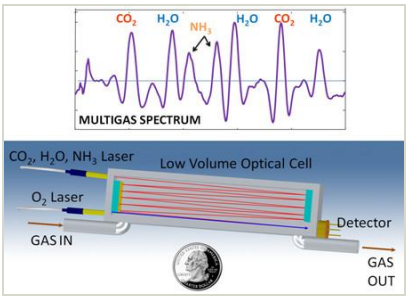


Spacesuit Multigas Monitor, Phase I

Completed Technology Project (2015 - 2016)

Images

Briefing Chart Image
Spacesuit Multigas Monitor, Phase I
(https://techport.nasa.gov/image/134853)



Final Summary Chart Image
Spacesuit Multigas Monitor, Phase I Project Image
(https://techport.nasa.gov/image/131718)

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.2 Portable Life Support System

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System